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PHILIPPINE ZOOLOGICAL EXPEDITION 1946-1947

STAG BEETLES (COLEOPTERA: LUCANIDAE)

BERNARD BENESH

The Lucanidae collected by the Chicago Natural History Museum Zoological Expedition to the Philippines, 1946-47 (Hoogstraal, 1951) consisted of a total of 57 adult specimens, representing 8 genera and 12 species. Eight species are represented from Mindanao, five from Palawan, and two from Luzon. Two species, *Odontolabis planiceps* Didier and *Aegus impressicollis* Parry, have not previously been recorded from the Philippines, and another, *Figulus hoogstraali*, is herein described as new.

I am greatly indebted to Mr. William J. Gerhard, Curator Emeritus, Division of Insects of the Museum, for the privilege of examining and reporting upon this collection. I am likewise indebted to Mr. Henry S. Dybas, Associate Curator, for his help in segregating the material for my study and to Mr. Rupert L. Wenzel, Curator, for his suggestions in the course of preparing the manuscript.

Subfamily FIGULINAE

Genus *Figulus* Macleay

Figulus Macleay, 1819, Horae Ent., 1: 109.

Figulus hoogstraali, new species. Figure 16, c-f.

This species somewhat resembles *F. foveicollis* (Boisduval) 1832, a species known from the Fijis, New Caledonia and New Hebrides, but differs as follows: the canthus is narrower anteriorly than posteriorly (in *foveicollis* it is nearly rectangular and converges towards

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the base), the pronotum is not foveate, the body is less parallel, the legs less spinose, and the mentum lacks the two tubercles anterior to the pits. The male terminalia of the two species differ radically: in *hoogstraali* the parameres (fig. 16, *e*) are margined by translucent membrane for one-half their width and the flagellum is fairly short and stout; in *foveicollis* (fig. 16, *h, i*) the parameres are fully sclerotized, the apices are tufted, and the flagellum is very slender and twice as long as in *hoogstraali*.

Black, shining. Head transverse, twice as broad as long, the anterior margin nearly straight. Clypeus produced, bilobed, lateral anterior angles obtuse, thence feebly emarginate to the canthus. Canthus broad, anterior angles arcuate, sides nearly straight, slightly diverging to the subacute basal angles, thence obliquely converging to posterior margin of the head. Eyes small, completely divided by the canthus. Vertex of head with a transverse impression, which has a few minute punctures and is limited in front by two broadly separated tubercles; frons and canthi with scattered punctures. Mandibles slightly shorter than the head, arcuate externally and laterally keeled, slightly bent upwardly, apex of the right mandible more acute than that of the left; inner edge of right mandible bidentate, with a large median tooth and a smaller posterior denticle, left mandible tridentate, with a large median tooth, a denticle below and anterior to it, and another smaller denticle posterior to and on the same plane as the median tooth. Antennae 10-segmented, piceous, shining.

Pronotum nearly quadrate, longer than broad, the anterior margin sinuate; anterior angles feebly produced and obtuse; sides diverging to beyond the middle (the latter arcuate), thence obliquely converging to basal angles; basal angles broadly arcuate and obsoletely crenulate; basal margin produced at middle; front of pronotum strongly declivous, with a median tubercle; anterior angles with a few punctures; disk impunctate.

Scutellum indistinct, cuneiform. Elytra elongate, one and one-half times as long as broad, convex, glabrous; humeri feebly produced and rectangular; sides parallel to apical third, thence attenuate to apex; with nine punctate striae, the punctures ovate; the first and ninth, the second and third striae (counting from the suture) united on posterior declivity; elytral intervals strongly convex, especially toward the base. Legs short and fairly stout; anterior tibiae broader than the intermediate and posterior ones, strongly furcate, armed behind the furcation with five to six teeth, these gradually smaller toward the base; middle tibiae with a strong median spine, serrulate above the spine; posterior tibiae with a single spine at apical third; tarsi slender, one-fifth shorter than the tibiae, fulvous beneath.

Maxillary palpi piceous. Mentum (fig. 16, *c*) transverse, feebly lobate anteriorly, sides arcuate, base straight and elevated; central area with two large, deep, circular pits, the walls of the pits rugulose, the bottoms impunctate and shining; the rest of the mentum rugose. Gula blood-red. Genae punctured, the canthi sparsely setose beneath. Prosternal process simple. Metasternum and first abdominal sternum cribripunctate. Abdominal sterna 2-5 convex, remotely punctate, margins and punctures setose. Secondary sexual characters not evident.

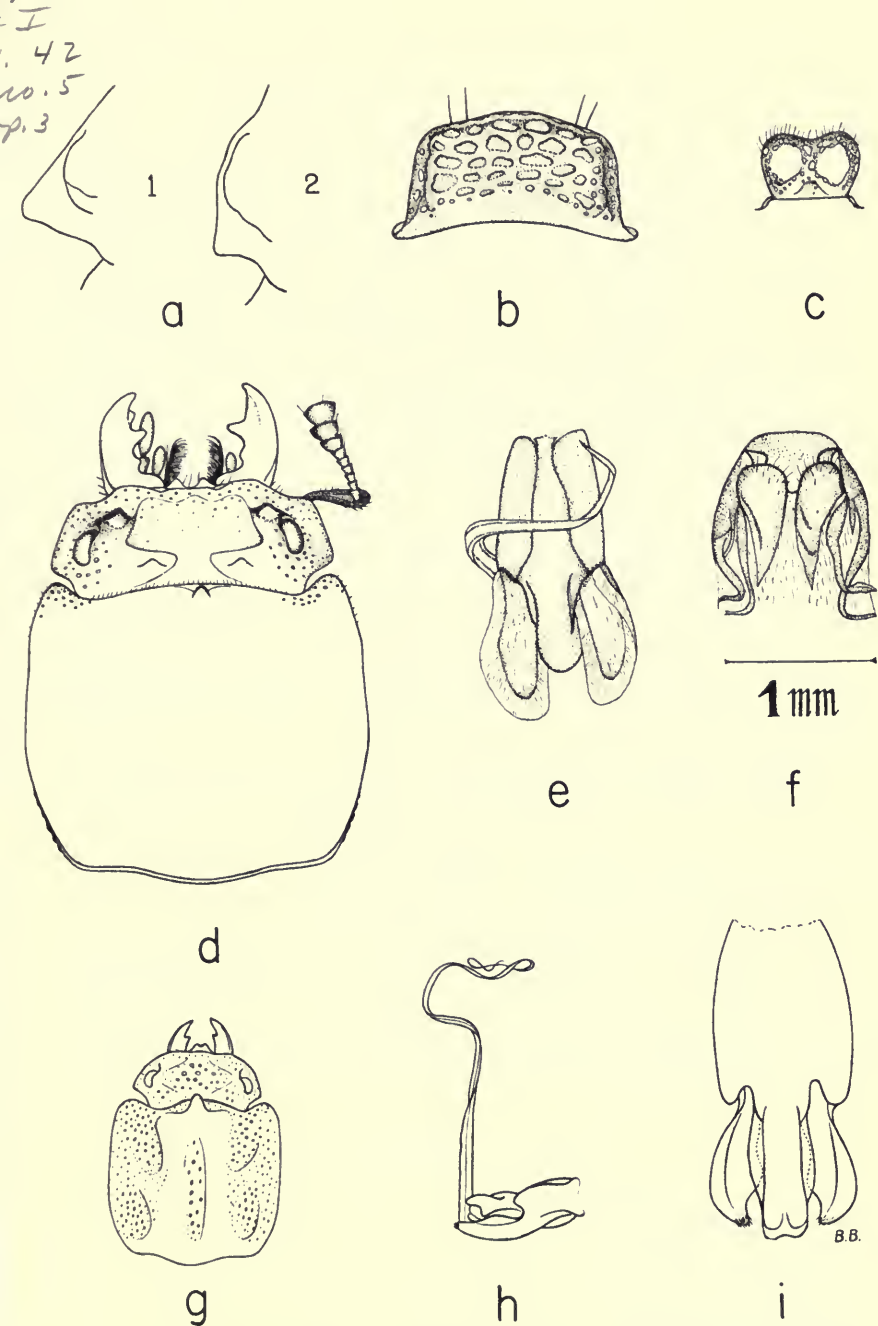


FIG. 16. a1, b. *Odontolabis planiceps* Didier: a1, prosternum; b, mentum. a2, *Odontolabis latipennis* (Hope and Westw.), prosternum. c-f, *Figulus hoogstraali*, new sp.: c, mentum; d, head and pronotum, female, allotype; e, male genitalia; f, female genitalia. g, *Figulus fissicollis* Fairmaire, head and pronotum, maximum development. h, i, *Figulus foveicollis* (Boisduval), male genitalia: h, lateral aspect; i, dorsal aspect (same scale as e, f).

MEASUREMENTS

	Length	Width
	mm.	mm.
Head.....	1.5	4.5
Mandibles.....	1.5	...
Pronotum.....	5.9	5.7
Elytra.....	9.2	5.4

Holotype.—A male from the eastern slope of Mount McKinley, at 6,400 feet altitude, Mindanao, Philippine Islands. Collected "in a very dry interior of a large, dead vine, 50 ft. up on tree," September 8, 1946, by Harry Hoogstraal. In the collection of Chicago Natural History Museum.

Allotype.—A female, same data and repository as the holotype.

Paratypes.—Two males and two females, same data and repository as the type.

Remarks.—Because of the remarkable constancy in size of the individuals in the type series, measurements are given for only a single specimen, the allotype. The variation in length was slight (15.7–16.9 mm.).

I take pleasure in naming this species after the collector, Mr. Harry Hoogstraal, the leader of the expedition.

Figulus fissicollis Fairmaire. Figure 16, *g*.

Figulus fissicollis Fairmaire, 1849, Rev. Mag. Zool., (2), 1: 414.

A minor form of *fissicollis* was figured by Benesh (1950, p. 51) in order to illustrate the characters that separate it from *manillarum*; the drawing (p. 65) represents the larger form of the species, which has been described under two specific names, *lupinus* Kriesche (1922, p. 131) and *monochromus* Didier (1930, p. 171).

Subfamily DORCINAE

Genus *Cyclommatus* Parry

Cyclommatus Parry, 1863, Trans. Ent. Soc. London, (3), 1: 449.

Cyclommatus dehaani (Westwood)

Lucanus dehaani Westwood, 1842, Ann. Mag. Nat. Hist., 8: 124.

Material examined.—MINDANAO: Mount McKinley (east slope), second growth forest; 2 males (length, 35–38 mm.); December, 1946; H. Hoogstraal and F. G. Werner. Mount Apo (east slope), alt.

2,800 ft. (Todaya), 4,300 ft. (Camp Mainit); 1 male, 1 female; October–November, 1946; H. Hoogstraal and D. Heyneman.

This species is also known from Borneo and Sumatra.

Cyclommatus zuberi Waterhouse

Cyclommatus zuberi Waterhouse, 1876, Ent. Month. Mag., 12: 173.

Material examined.—MINDANAO: Mount McKinley (east slope); 1 male (length, 51 mm.); September 23, 1946; H. Hoogstraal.

LUZON: Mount Makiling, alt. 2,000–3,000 ft.; 1 female (length, 20 mm.); June 1, 1947; F. G. Werner.

The species is also recorded from Mindoro, Negros, and Sibuyan. Didier and Séguy (1953, p. 124) record it from Wallis Island (Samoan group), nearly four thousand miles eastward and twelve hundred miles southward. Their record needs verification.

Genus **Prosopocoilus** Hope and Westwood

Prosopocoilus Hope and Westwood, 1845, Cat. Lucan. Coleop., pp. 4, 30.

Macrogathus Hope and Westwood, op. cit., p. 5 (not Lacépède, 1800).

Metopodontus Hope and Westwood, op. cit., pp. 5, 30.

Cladognathus Burmeister, 1847, Handb. Ent., 5: 364.

Prosopocoelus Parry, 1875, Cat. Coleop. Lucan., 3rd ed., p. 5.

Hoplitocranum Jakowleff, 1896, Horae Soc. Ent. Ross., 30: 172.

Metopotropus Oberthür and Houlbert, 1913, Insecta, 3: 416.

Cyclotropus Oberthür and Houlbert, loc. cit., 3: 449.

Pelecognathus Houlbert, 1915, Insecta, 5: 28.

Homoderinus Kriesche, 1926, Stett. Ent. Zeit., 87: 384.

Dorcus Arrow, 1935, Trans. Roy. Ent. Soc. Lond., 88: 109 (part, not Macleay, 1819).

Cladognathinus Didier and Séguy, 1952, Rev. franç. d'Ent., 19: 223; 1953, Encycl. Ent., (A), 27: 39, 103, new synonym.

Didier and Séguy (1953, p. 109) credit the spelling *Prosopocoelus* to Hope and Westwood (op. cit.). However, the original spelling used by these authors was *Prosopocoilus*. The spelling *Prosopocoelus* was first used by Parry (loc. cit.) and subsequently by other authors. Kriesche (1921, p. 92) returned to the original orthography.

This is a genus of wide distribution. It is represented from West Africa to New Hebrides and from Manchuria to Australia. Of the ten species known to occur in the Philippines, three are represented in the present collection.

Prosopocoilus cavifrons (Hope and Westwood)

Lucanus cavifrons Hope and Westwood, 1845, Cat. Lucan. Coleop., p. 13.

Material examined.—PALAWAN: Puerto Princesa (sea level), in second growth forest; 1 male (length, 27.5 mm.); May 4, 1947; H. Hoogstraal.

Prosopocoilus ebeninus Albers

Prosopocoelus ebeninus Albers, 1892, Deutsche Ent. Zeitschr., 35, (1891), p. 367.

Material examined.—MINDANAO: Mount McKinley (east slope), alt. 3,300 ft.; 1 female (length, 31 mm.); September 3, 1946; H. Hoogstraal.

This species was described from Mindanao, without a precise locality. The male is yet to be discovered. From the size of the female, however, it can be presumed that the males are large, as in the other *Prosopocoilus* species endemic to the Philippines. The female is ebony black, polished and shining, without an opaque lateral elytral stripe. Van de Poll (1895, p. 125, footnote) in his description of *P. javanensis*, refers to *ebeninus* as follows: "It is to the forma media of *P. cavifrons* that *P. ebeninus* Albers must be referred." This view is erroneous, because *ebeninus* is black throughout and lacks the mirror-like, broad sutural stripe that is present in *cavifrons*; *cavifrons* is reddish-brown to dark chocolate-brown, and has the elytra opaque laterally.

Prosopocoilus occipitalis (Hope and Westwood)

Lucanus occipitalis Hope and Westwood, 1845, Cat. Lucan. Coleop., p. 13.

Material examined.—MINDANAO: Mount McKinley (east slope), alt. 5,200 ft.; 1 male (length, 28.5 mm.); August 28, 1946; H. Hoogstraal.

PALAWAN: Mount Balabag (south slope), alt. 2,800 ft., Mantaingajan Range; 1 female (length, 18 mm.); May 4-17, 1947; F. G. Werner.

This species occurs throughout the Oriental Region. It is recorded from the Andamans, Borneo, Celebes, Formosa, Java, Loochoo (Ryukyu) Islands, Lower Burma, Malay Peninsula, Nias, Philippines (Luzon, Mindanao, Negros, Palawan, Sibuyan), Simalur, Sumatra, Taliaboe (Xoella Archipelago), Tenasserim.

P. occipitalis varies greatly in appearance and coloration. It is the only species of *Prosopocoilus* known to me that in some forms approx-

imates the *forma capito*¹ of certain species of *Serrognathus*. The typical maculation of the pronotum consists of a small circular spot on each side close to the margin and a small median discal diamond. Certain variants have been given varietal and subspecific names. A melanistic form in which the maculae of the pronotum and elytra are much larger was named as a distinct species, *roepstorffi*, by Waterhouse (1890, p. 35). This form has subsequently been considered to be a race endemic to the Andamans. Concerning this melanistic aberration, Arrow (1950, p. 149) has remarked: "In the Andaman Islands the dark sutural stripe of the female dilates, whether invariably or not it is not yet possible to say, into an oval patch of variable size. The name *roepstorffi* was given to this form. The type is a male of low development in which the female coloration appears. A well-developed male from the same islands has the typical coloration found in continental localities." I have seen two female specimens of this dark aberration, from Borneo and the Philippines; it probably occurs throughout the range of the species.

The insect has been recorded under various generic names, *Lucanus*, *Cladognathus* and *Metopodontus*, the latter name being utilized by van Roon (1910, p. 24) and subsequent authors, although it does not agree with the subgeneric character given in the key of Hope and Westwood (1845, p. 30), namely "caput ♂ antice bimucronatum." As has been previously noted by Benesh (1953, p. 29, footnote), this character is applicable to males of maximum development. These have a frontal crest or lamina that is emarginate in the middle and produced as a tubercle or point on each side of the emargination. Such crests or laminae occur in large forms of some species of *Odonotolabis*, *Homoderus*, *Cyclommatus* and *Prosopocoilus*, and even in the minute *Aegotypus armatus* (Parry). All the intermediate and minor developments of the males in *Prosopocoilus* and the subgenus *Metopodontus* are similar, with "caput maris antice planum hypostomate excavato" (Hope and Westwood, 1845, p. 30). In addition it should be noted that the large males of each species, to which the name *Metopodontus* has been applied, have a different type of head ornamentation. The latter must therefore be considered as a specific rather than a generic character. Because of this I have synonymized *Metopodontus* under *Prosopocoilus*.

¹ In this form the head is greatly enlarged and bulbous and the mandibles are much reduced in size.

Genus **Serrognathus** Motschulsky

Serrognathus Motschulsky, 1861, *Études Ent.*, **10**: 12.

Two species of this genus are known from the Philippines. One of these is represented in the material before me. It is a member of the *gypaetus* group, for which Didier (1931, p. 196) proposed a sub-genus, *Lasiodorcus*.

Serrognathus (Lasiodorcus) cribriceps (Chevrolat)

Dorcus cribriceps Chevrolat, 1841, *Rev. Zool.*, **1841**: 224.

Material examined.—MINDANAO: Todaya, Mount Apo (east slope), alt. 2,800 ft.; 5 males (length, 30–43 mm.), 3 females (length, 25 mm.); October 27, 1946; H. Hoogstraal and D. Heyneman.

The species is also known from Luzon (Bataan, Laguna [Mount Makiling]) and Negros Occidental (Mount Canlaon); it closely resembles *gypaetus* (Cast.), from which species it can be separated with difficulty. It is the only Philippine lucanid species in which the mandibles of the male are hirsute.

Genus **Metallactulus** Ritsema

Metallactus Albers, 1884, *Deutsche Ent. Zeitschr.*, **28**: 301.

Metallactulus Ritsema, 1885, *Notes Leyden Mus.*, **7**: 54, nom. nov. for *Metallactus* Albers, not Suffrian, 1866 (*Linn. Ent.*, **16**: 248).

Dorcus Arrow, 1950, *Fauna of India, Pakistan, etc.*, Coleop. Lamell., IV, Lucanidae et Passalidae, p. 78 (in part).

Metallactulus is one of many generic names which the late Gilbert J. Arrow (1935, 1939, 1943, 1950) synonymized under *Dorcus*. In my opinion, he failed to re-define adequately the genus *Dorcus* as he construed it; hence I am retaining *Metallactulus*, among others, as a valid genus.

In synonymizing *Metallactulus* (1939, p. 85) Arrow also placed *Metallactulus bennigseni* Boileau as a synonym of *Aegus alternatus* (without having seen Boileau's type) on the assumption that Boileau had incorrectly figured the canthus and elytral striae. In deference to Boileau's long experience with the lucanids, I feel that *bennigseni* should be regarded as a distinct species of *Metallactulus* until examination of the type indicates otherwise.

Metallactulus parvulus (Hope and Westwood)

Lucanus parvulus Hope and Westwood, 1845, *Cat. Lucan. Coleop.*, p. 25.

Dorcus carinulatus Nagel, 1941, *Deutsche Ent. Zeitschr.*, **1941**: 56, fig. 3 (new synonym).

Material examined.—MINDANAO: Maco, Tagum, Davao Province (sea level); 3 males (length, 13.5–17 mm.); December, 1946; H. Hoogstraal and D. Heyneman. Matutungan, Santa Cruz, Davao Province, alt. 2,500 ft.; 1 male; under bark of log; December 13, 1946; M. Celestino.

PALAWAN: Bacungan (sea level), in second growth forest; 1 male; March 22–26, 1947; F. G. Werner.

The uncinatate maxillae of the female of *Metallactulus parvulus* indicate a relationship to other members of the Dorcinae. On the other hand, the structure of the female genitalia indicates a close affinity to the Lucaninae. The mentum is semicircular, with the base straight, similar to that in *Cyclommatus*. The discal tuberculation of the head varies greatly and is inconstant; usually there are two closely placed, oblong, posteriorly converging tubercles (sometimes united at base) on a line with the bases of the eyes. Sometimes these tubercles are lacking or supplanted by an impunctate area. The type of *Dorcus carinulatus* Nagel (1941, p. 56) is a male with posteriorly converging tubercles. An interesting fact, not previously recorded, is that the frontal tubercles may occur in the female also. Females are rare in collections. In more than 25 years I have examined approximately 500 specimens of this species and have seen only two females.

Other Philippine specimens are known from Calayan, Negros, and Polillo. The species is also known to occur on Amboina (Benesh Collection, CNHM), Formosa and Kotosho. The Amboina specimen (a male) differs from others seen by me in that the head lacks tubercles but has two strong gibbosities behind the eyes toward the occiput.

Genus *Aegus* Macleay

Aegus Macleay, 1819, Horae Ent., 1: 112.

Aegus impressicollis Parry

Aegus impressicollis Parry, 1864, Trans. Ent. Soc. London, (3), 2: 58.

Material examined.—PALAWAN: Brooke's Point, Tigoplan River Valley; 2 males (length, 20–26 mm.); April 29, 1947; F. G. Werner.

This is an addition to the Philippine fauna; the species is also recorded from Borneo, Malacca and Sumatra.

Aegus philippinensis Deyrolle

Aegus philippinensis Deyrolle, 1866, Ann. Soc. Ent. Belg., 9, (1865), p. 32, pl. 2, fig. 4.

Material examined.—MINDANAO: Mount McKinley (east slope), alt. 3,200 ft.; 2 males, 2 females; September, 1946; H. Hoogstraal. Mount Apo (east slope), alt. 2,800 ft., Todaya, alt. 4,300 ft. (Camp Mainit); 3 males, 1 female; October 27–November, 1946; H. Hoogstraal and D. Heyneman. Maco, Tagum, Davao Province (sea level); 2 males, 1 female; October, 1946; H. Hoogstraal. Matutungan, Santa Cruz, Davao Province, alt. 2,500 ft.; 11 males (length, 12–27 mm.), 4 females (length, 14–17.5 mm.); December 13, 1946; M. Celestino.

Genus **Gnaphaloryx** Burmeister

Gnaphaloryx Burmeister, 1847, Handb. Ent., 5: 396.

Gnaphaloryx opacus burmeisteri Nagel

Gnaphaloryx burmeisteri Nagel, 1926, Ent. Mitt., 15: 120.

Material examined.—PALAWAN: Puerto Princesa (sea level), in second growth forest; April 26, 1947; H. Hoogstraal.

The insect is also known to occur in the Andamans, Borneo, Celebes, Formosa, Java, New Guinea, Sumatra and Tonkin.

According to Arrow (1935, p. 113) the name *burmeisteri* was given to the form which has been known as *taurus* (Fabricius), Nagel having restricted the name *opacus* to the form in which the mandibles have a tooth close to the terminal fork, or at least past the middle and not basal to it.

Subfamily LUCANINAE

Genus **Odontolabis** Hope

Odontolabis Hope, 1842, Ann. Mag. Nat. Hist., 9: 247.

Odontolabis planiceps Didier

Odontolabis planiceps Didier, 1930, Etudes Coleop. Lucan. du Globe, 7: 147, fig. 108.

Material examined.—MINDANAO: Mount McKinley, Davao Province, alt. 3,300 ft., in mixed second growth and *Dipterocarpus* forest; 4 females (length, 46–48 mm.); July 17, 1946; H. Hoogstraal.

This species was described from Amboina, and the present record is an addition to Philippine fauna. Didier compared *planiceps* with *latipennis* (Hope and Westwood) and separated the two species by the form of the prosternal process (fig. 16, a1, b). Actually

planiceps is more closely related to *O. intermedia* van de Poll and differs from it in the following characters: broader form; head finely granulate and shallowly punctate, occiput shining (in *intermedia* coarsely pitted on frons and canthi, disk roughened and sculptured by large, remote punctures); rugose mandibles with "trois denticules sur le bord interne" (which is not corroborated by Didier's figure, which clearly shows the left mandible tricuspid, the right bicuspid; in *intermedia* coarsely pitted as on the frons, both distinctly tricuspid, the median cusp largest, the frontal cusp somewhat pointed, the basal one rounded); prothorax "finement granuleux" (in *intermedia* granulate on lateral margins, disk strongly polished and nitid); elytra less attenuate posteriorly, basal half of margin opaque (in *intermedia* shining throughout).

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